Problem F: **Weird Coloring**

You are given an undirected graph . You should paint the edges of with colors such that:

1. Sum of colors of all edges be minimum.
2. For each edge with color , there must be an adjacent edge such that the color of that edge is . Two edges are adjacent if they have a common vertex.

## **Input**

**First line of Input contains the number of the tests**.

For each case, first you are given and ,the number of vertices and edges respectively. In the following lines, in each line you are given two endpoints of an edge.

## **Output**

For each case, output minimum number of sum of the edges that have appropriate properties.

|  |  |
| --- | --- |
| **Sample Input** | **Sample Output** |
| **2**  **3 3**  **1 2**  **2 3**  **1 3**  **18 27**  **1 2**  **1 4**  **1 6**  **3 2**  **3 4**  **3 6**  **2 5**  **4 5**  **7 8**  **7 10**  **7 12**  **9 8**  **9 10**  **9 12**  **8 11**  **10 11**  **13 14**  **13 16**  **13 18**  **15 14**  **15 16**  **15 18**  **14 17**  **16 17**  **5 11**  **12 17**  **18 6** | **2**  **14** |